

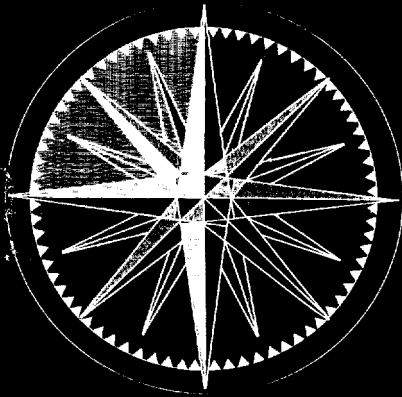
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# SPECIAL REPORT

PROBLEMS IN THE SOVIET SUBMARINE SERVICE

CENTRAL INTELLIGENCE AGENCY  
OFFICE OF CURRENT INTELLIGENCE

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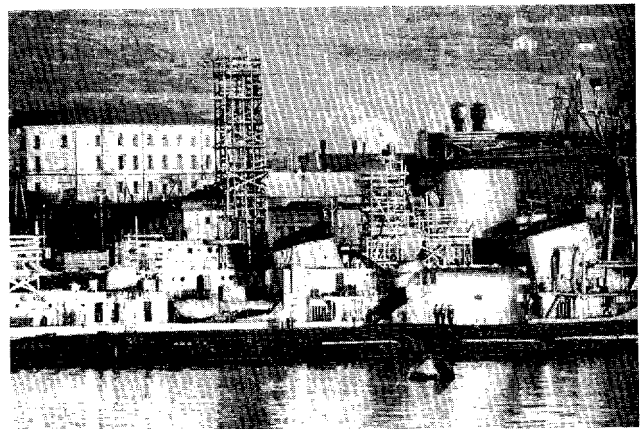
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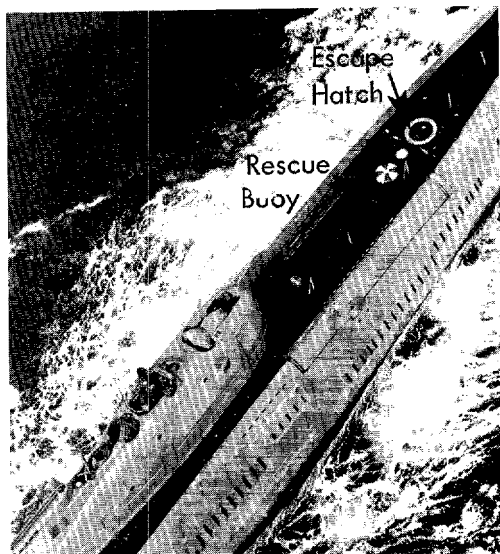
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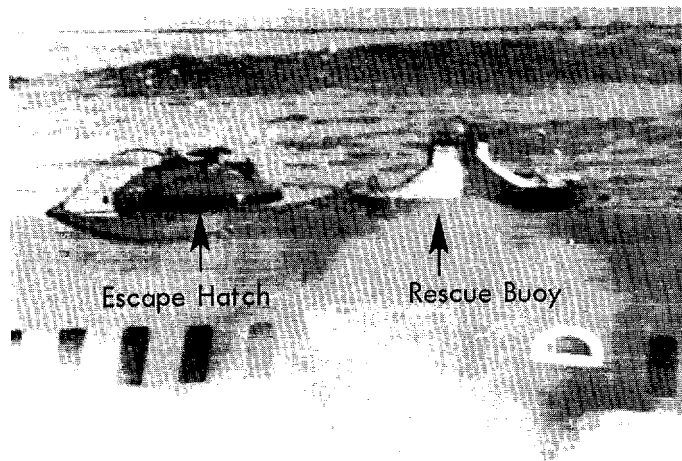
### DAMAGED F - CLASS SUBMARINES AT ROSTA SHIPYARD NEAR MURMANSK



### ESCAPE EQUIPMENT ON SOVIET SUBMARINES

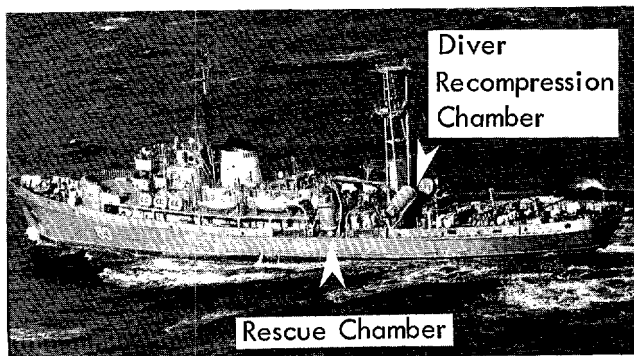


J-class Cruise - Missile Submarine



R-class Torpedo Attack Submarine

### PRUT - CLASS SUBMARINE RESCUE SHIP



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**PROBLEMS IN THE SOVIET SUBMARINE SERVICE**

Next to revealing state secrets, the greatest sin against Soviet security regulations is apparently the exposure of any deficiency in the workings of Soviet-built and -operated equipment. A faithful reader of the Soviet press would hardly be aware that airplanes crash and ships are lost at sea. In 1955, when the battleship Novorossisk struck a mine and carried some 900 crew members to their death, the Soviet public was never informed. Despite stringent security measures, however, the word sometimes filters out. There have been several reports of submarine accidents ranging from fuel explosions to collisions. Vessels and crews have been lost. Some of this can be blamed on ice, fog, and darkness but much must be attributed to inadequate training and faulty equipment design.

The Dangerous Q-class

One costly experiment with the Q-class torpedo attack submarine earned it the nickname of "cigarette lighter" among Soviet submariners. Of the 30 which were built between 1954 and 1957, about 10 had a closed-cycle diesel propulsion system which used liquid oxygen. Although sound in principle, this system is highly explosive unless handled with a degree of cleanliness and caution not characteristic of the Soviet Navy. All officers who serve on these Qs receive a 20-percent bonus--known as "death pay"--and each year of their service is credited as 18 months toward longevity pay increases and pensions.

The conventional Qs had no such built-in problems, but at least one was lost because of faulty navigation. It collided with a destroyer in the ap-

proaches to Tallinn in October 1956, was cut in two, and sank immediately. Four men escaped; 27 bodies were recovered with the submarine a month later.

Trouble With Nuclear Submarines

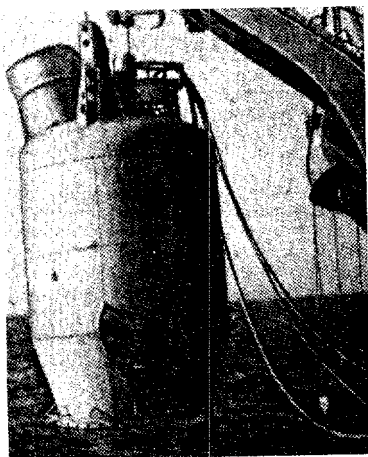
Service on the USSR's early nuclear submarines also was hazardous, apparently because US successes spurred Soviet political planners to insist on crash design and construction programs. 25X1

[redacted] claimed that the first nuclear subs had "serious deficiencies because of their boilers." [redacted] was even more critical: "We have atomic submarines but submariners have nothing good to say about them." 25X1

Specific reports talk of troubles with reactors and ventilation systems. One crew

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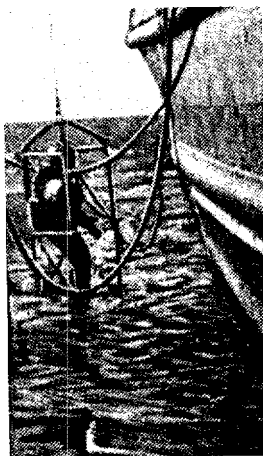
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Soviet Rescue Chamber or Bell



Closeup of Soviet Diving or Recompression Chamber used to bring divers up from the depths



Diving Platform used by Soviet Rescue and Salvage Divers



Escape Training Tower, probably near Leningrad



Soviet Escape Suit

New US Escape Hood (Steinke Hood)



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25X1 reportedly had to be hospitalized for radiation sickness, and an officer is said to have been killed in a reactor accident.

25X1 In 1959, [redacted] a nuclear submarine was unable to surface for a prolonged period and nearly all crew members were affected by the foul air.

Because of such incidents, all personnel on nuclear submarines apparently received a special bonus, known as "childlessness pay," equal to their regular salary. They also earned three years' longevity for every year served on one of these units. These regulations may have been abandoned as new and presumably improved nuclear submarines have been commissioned, but the Soviets still customarily send a rescue ship with nuclear submarines on long-range patrols. One suggestion of continuing difficulty is a recent report that the Soviets are still having trouble in purifying water sufficiently for pressurized water reactors of the type used in submarines.

#### Other Submarine Casualties

Seamanship seems to have been the chief cause of accidents involving the W-class torpedo attack submarines, which were designed and built from well-tested components. In 1957 one ran aground in the Black Sea at a depth of 200 feet. Fortunately for the crew, a destroyer managed to attach a line and pull the submarine to the surface. A few cases of carbon dioxide poisoning were the only casualties.

Perhaps most casualties have occurred in the Northern Fleet, which has the largest number of submarines and the worst of ice and visibility conditions. In 1957 and 1958 two collisions--one with a tug and one with a destroyer--reportedly caused heavy damage to submarines and killed five or six men. In 1961 a submarine apparently was lost with all hands in the Barents Sea, and in 1962 two Northern Fleet submarines reportedly suffered heavy damage and personnel casualties from ice. The hulk of an F-class submarine at Rosta is believed to have been salvaged after a collision with a merchant ship in early 1964.

Some F- and Z-class submarines, used on the longest cruises into the Pacific, the Atlantic, and the Mediterranean, have been photographed returning from clandestine patrols on the surface. They were apparently unable to avoid observation by diving because of damage, perhaps caused by heavy seas, to the air induction systems in their sails.

Numerous minor breakdowns and accidents have also been noted. An F-class submarine operating in the vicinity of the Quarantine Line near Cuba during the 1962 crisis was unable to submerge and was escorted back to its home port by a rescue tug. A W-class submarine on patrol near Japan in early 1963 also was unable to submerge and had to return to Soviet waters on the surface. In early 1963 an F-class submarine en route from the Baltic, where it was

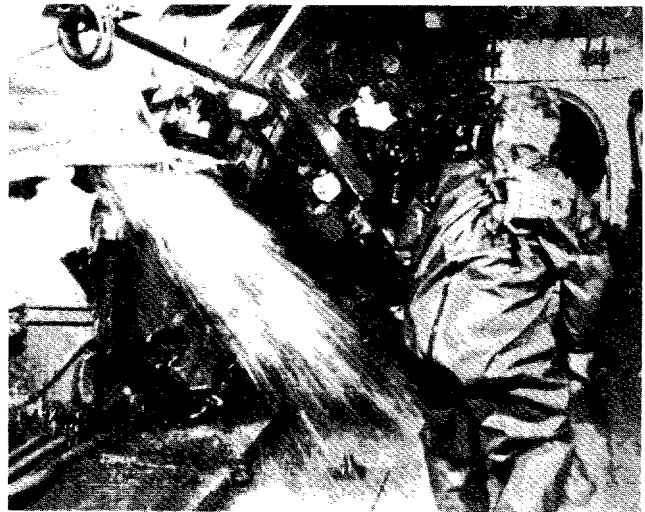
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### SOVIET SUBMARINE DAMAGE CONTROL TRAINING

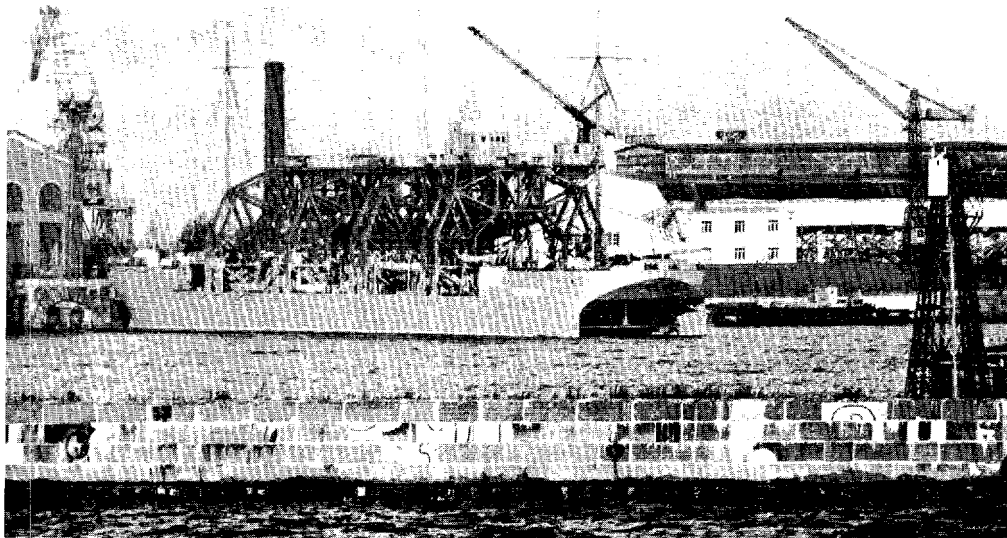


Fire Fighting



Blocking Off a Leak in the Pressure Hull

### UNUSUAL TWIN-HULL SALVAGE LIFTING SHIP AT KRONSTADT, NEAR LENINGRAD



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built, to the Northern Fleet damaged its bow in a collision with a Finnish merchant ship and was forced to return to Leningrad. In August 1963 a submarine being towed into Nahodka appeared, to an observer, to have a rebuilt stern, possibly the result of a collision.

Design and Damage Control

Photographs of damaged Soviet submarines show that a most vulnerable area is the after section of the sail from the deck to the snorkle exhaust. Soviet designers may have reduced the cross bracing and the thickness of the skin of the sail too much in their efforts to decrease topside weight.

Buoyancy characteristics of the W-class submarine have been analyzed and it has been determined that vessels of this class can surface with one or two of their six compartments completely flooded. Other Soviet submarine classes are estimated to have from five to nine watertight compartments. These too may be able to surface with two compartments flooded.

In general, Soviet damage-control capabilities are comparable to those of the US. The Soviets probably can plug or shore up several small punctures in the pressure hulls of their submarines while operating at sea.

Rescue and Salvage ships

The Soviets now have some 60 rescue and salvage tugs, submarine rescue ships, and other auxiliaries of this type. Most of this fleet has been built or converted since 1960, when the Soviets began modifying deck hatches on older submarines for bell or chamber rescue operations. Best equipped for rescue work is the 2,120-ton Prut-class rescue ship which is equipped with two diving chambers, two rescue chambers, an observation chamber, heavy mooring buoys, and air compressors. Several 840-ton T-58 minesweepers have also been converted to rescue ships and equipped with a rescue bell and a diving bell.

Rescue Training

Use of rescue equipment is apparently a regular part of the training program for Soviet submariners. Escape towers--high structures resembling water towers--have been built at at least one submarine school and apparently on the hull of one submarine at Leningrad and another at Sevastopol. These allow crew members to practice escape by flooding one compartment, opening a hatch, and floating or swimming to the surface. Their breathing apparatus consists of a close-fitting rubber hood, an oxygen cylinder, and a canister for absorbing carbon dioxide. Similar equipment was used earlier by the US and UK but has generally been replaced by buoyant free-

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breathing hoods containing only an initial charge of compressed air.

Despite this individual training, however, the USSR does not subscribe wholeheartedly to the British theory that trapped submariners can best be saved through their own efforts. Rather, like the US, it tries

when possible to rescue personnel in groups by use of diving bells. [REDACTED]

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[REDACTED] pointed out last December that salvage tugs and other support vessels are always at sea in areas where Soviet submarines are patrolling and that rescue operations can be conducted at depths down to 200 meters (656 feet). (SECRET NO FOREIGN DISSEM)

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